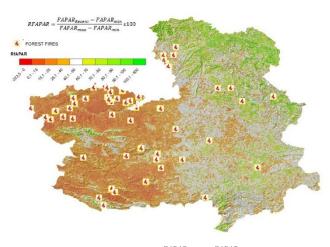


## **Copernicus Global Land Service Use Case**



# Forest Fire Risk through vegetation stress

User's reference: Castilla-La Mancha Forest Fires Service (INFOCAM)



 $RFAPAR \; (Relative \; FAPAR) = \frac{{}^{FAPAR_{Recent} - FAPAR_{min}}}{{}^{FAPAR_{max} - FAPAR_{min}}} x 100 \, from$ 1st June 2019 to 10th June 2019 and forest fires detected by VIIRS and MODIS remote sensing sensors and Forest Fires Service archive. Majority of fires are located at western region, where RFAPAR gets minimum values.

#### Benefits for the user

- > Drought assessment: vegetation stress risk.
- > Fuel load available for combustion assessment.
- > Fire intensity forecast which determine sectors where fire behavior could be more severe even out of fighting capacity.
- > Forest fire season preparedness. Moving resources from prevention tasks to fire-fighting tasks.
- Increase safety for personnel and people.

#### Data sources used

#### From the service

- NDVI 1 km V2.2 Global
- ➤ NDVI Long Term Statistics 1km V2
- ➤ VCI 1km V1
- FAPAR 1 km V2

#### Other sources:

- > NASA FIRMS (Fire Information for Resource Management System).
- > Forest fires statistics archive.

**Activity domain:** Forest fires risk management Geographic area: Castilla-La Mancha, Spain

#### Overview

Forest fires are increasingly threating environmental resources, public infrastructures and people as well. In order to set up suitable forest fires policies, fire management requires vital information regarding vegetation condition, which play a role as fuel at combustion process. Now, forest fires are becoming fuel-driven fires, due to two main factors: more frequent and intense drought episodes under climate change scenario and higher fuel load at forests under a decreasing forest management. At this point, knowing of fuel load and how dry is vegetation are key points to reduce uncertainty, which will allow forest fire managers to take the optimal decisions at a complex environment, not only at operational phase (tactical decisions), but also emergency preparedness phase (strategic decisions).

### **Facts & key numbers**

Success use of Vegetation Condition Index (VCI) and Relative Greenness (RG) parameter as well to explain temporal fire risk distribution:

$$RG = \frac{NDVI_{RECENT} - NDVI_{min}}{NDVI_{max} - NDVI_{min}} \times 100 \text{ (Vega-Nieva et al., 2019)}$$

- Annual average of VCI and RG parameters explain up to 72 % and 67 % respectively of annual account of burnt area. The lower is annual average of VCI and RG, the higher is annual burnt area.
- RFAPAR helps to understand spatial fire distribution; the lower is the RFAPAR, the higher is the fire density.

### About the user

Organization type: UNAP, Regional Forest Fires Service (INFOCAM), Castilla-La Mancha Regional Government (JCCM), Spain.

Web site: <a href="https://www.castillalamancha.es/">https://www.castillalamancha.es/</a>

Contact: incendios@iccm.es



